The Treatment of Enteric Fever by Cold Baths.

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THE TREATMENT OF ENTERIC FEVER BY COLD BATHS.

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The treatment of enteric fever by cold baths according to the Brand system, *i. e.*, by sudden immersion in cold water accompanied by vigorous rubbing, has been slowly but steadily gaining adherents in this country. My own experience with it includes ninety-five cases treated during the past three years at the New York Hospital, where Dr. Peabody first employed the system, and at the Presbyterian Hospital, where I introduced it last year. While the number of cases thus far treated at these two institutions is not yet large enough to furnish absolutely convincing statistics, the figures already obtained are certainly significant. Thus 340 cases treated by other methods at the Presbyterian Hospital, New York, from 1882 to 1892 gave a mortality of 17.8 per cent., and 501 cases treated by other methods at the New York Hospital from 1877 to 1889 gave a mortality of 19.4 per cent. Ten years of "expectant" treatment among 1,305 cases in various New York hospitals showed a death rate of between 20 and 30 per cent. (Delafield). By the Brand system the mortality of typhoid fever in both the above institutions has been reduced to 7.5 per cent. The cases herewith reported are not selected cases; that is, with the exception of patients brought into the hospital actually suffering from severe hemorrhage or collapse (and they

number only half a dozen), the bathing or "tubbing" treatment is applied to all. The type of enteric fever with which we meet in New York city is usually severe. The New York Health Board reported 7,712 cases from 1876 to 1885, with a mortality of 41.28 per cent. The temperature runs high and hemorrhage and other serious symptoms and complications are of frequent occurrence. Moreover, many hospital typhoid patients do not enter the institution early, but wait until some urgent or critical symptom alarms them, and a decided majority are not seen before the tenth day, while many are received later. It is doubtless due to these causes that the mortality among patients treated by "tubbing" in this country is not so small as it is in the French and German army hospitals, where with many thousand cases it has fallen below 2 per cent.

The method of "tubbing" which I have employed is as follows: A portable tub on rollers is placed at the patient's bedside and partly filled by a hose with water at 70° F. When the patient's temperature rises to 102.5° F. he is given half an ounce of whisky and in a few minutes is lifted naked into the tub, in which there is enough water for the complete immersion of the body. In some cases cold water from a pitcher is poured upon the head. The patient is left in the tub for fifteen minutes, during all of which time he is vigorously rubbed over the entire body by two nurses, being turned from side to side occasionally to facilitate the friction of the back. He is then lifted on to blankets on the bed and rubbed dry. He is then given a glass of hot milk with malt extract and left to sleep, which he usually does, owing to the soothing influence of the bath. Between the baths the patient lies on a blanket and is covered only by a sheet, to favor evaporation from the surface, and in severe cases a compress wet in cold water and large enough to cover the chest and abdomen is constantly worn.

While in the tub many patients begin to shiver in

five or ten minutes, but the bathing is persisted in and they soon cease to shiver. In young children, and exceptionally in adults with very poor circulation, a bath of ten minutes may be better than fifteen. Many patients, especially those in whom treatment is begun early, do not require over a dozen or fifteen baths. Often three or four a day are sufficient. In bad cases they must be given once in three hours both day and night. I have several times given eighty or ninety baths to one person. On only five occasions has it been necessary to discontinue the treatment on account of the serious objection of the patient. These were all exceedingly nervous persons (three of them men), and they objected continually to everything done for them, being equally intolerant of the Leiter cold coil and alcohol sponge bath.

One of the house staff always superintends the giving of each bath, and as a rule, with a little tact and encouragement objections on the part of the patient are readily overcome. To highly nervous subjects it is well to give an initial bath at 90°, to accustom them to the process. It often happens that the temperature, especially if moderate, is but little reduced after the bath, but as a rule a reduction of between 2° and 2½° F. follows and the temperature remains low for two or three hours, when it again may rise slowly. The temperature often continues falling after the bath. Even in those cases in which no reduction of temperature results, the patient's general condition remains phenomenally good. In fact, one scarcely ever sees the typical "typhoid condition" among patients who have been systematically "tubbed."

Delirium is the decided exception, not the rule, and all the nervous symptoms are lessened; the tongue is moist and clean, the digestion and appetite are remarkably good, tympanites is not prominent, the skin is healthy and active, bedsores do not occur, the urine is abundant, sleep is natural, nutrition is excellent, the facial expression is clear, the eyes are

bright, the voice is strong, and the pulse is full and regular; in a word, the whole clinical aspect of the case is completely altered. The occurrence of menstruation need not interrupt the treatment, and in one successful case forty baths were given although the patient was five months pregnant.

Seven deaths occurred from the following causes: Four from intestinal perforation and peritonitis, two from hemorrhage and one from pneumonia. It can hardly be claimed that the baths precipitated either the fatal hemorrhage or perforation, for the majority of cases with hemorrhage recovered, and of the cases of perforation one had had thirty-six baths and another forty-three before that casualty ensued.

It is true that the "tubbing" has neither shortened the ordinary duration of the disease in the cases which I have treated, nor has it altogether prevented mild relapses, which followed in nine cases, but complications have been very few and the general result has been remarkably satisfactory.

Among the complications observed were intestinal hemorrhage in six cases which recovered, bronchitis, otitis twice, bursitis, ischio-rectal abscess, and the unusual phenomenon of a large abscess of the thyroid gland. Several patients who recovered had temperatures ranging above 106° F. before the treatment was commenced.

The other patients all did extremely well; several seemed to enjoy the effects of the "tubbing," and in those who were dull and lethargic on admission the baths had a truly wonderful effect in improving the apathetic mental condition and the pulse. The chief characteristic of nearly all the cases treated by bathing was the absence of the nervous symptoms so commonly observed, such as stupor or delirium, subsultus, etc. None of the cases received any antipyretic medicine while the bath treatment was in progress. Several patients complained of tenderness and pain in the calves of the legs and soles of the feet which gave considerable annoyance. The symp-

toms resembled a mild peripheral neuritis. Attempts were made to relieve the pain by the local use of a liniment of menthol, chloral and camphor, but without decided benefit. The symptoms subsided after a week or ten days. It is well known that such cases occur without the baths, and there was a similar complication at the same time in a patient who was not put into the tub at all. The symptoms merely seemed somewhat more frequent among those who were bathed. Those men who had hairy chests showed a slight papillary eruption around the hair follicles which caused slight burning. It might be avoided by cutting the hairs. Patients should pass their water before entering the tub, otherwise the cold is apt to make them micturate. With a large service it is not practicable, nor is it necessary, to change the water after each bath, unless the patient happens to void feces or urine in the tub. This accident would be a serious objection to the "tubbing," but fortunately it seldom happens.

The objection is often raised against the Brand method that the expense and trouble are too great. I have had the curiosity to form an estimate in regard to this matter.

Twenty-two cases taken without selection from the records of the Presbyterian hospital received collectively 372 tub baths, or an average of seventeen each. Seventy-two cases from the New York Hospital records received 2,052 baths, or an average of over twenty-eight each. At least half an hour is consumed giving the bath and caring for the patient immediately before and after it, and the services of two attendants and one of the house staff are required during most of this time. To give 2,052 baths would therefore occupy three persons for 1,026 hours or over forty-two days.

It is useless to undertake the Brand system unless one is prepared to carry it out with careful detail and much labor. It is true that this entails considerable expense and trouble, but the arguments so

often used against it can not long prevail in face of accumulating statistics of greatly lowered mortality, now covering a period of nearly thirty years. On commencing the use of the Brand system I was quite skeptical in regard to its value, for experience some years before with the older method of putting patients into a tub of water at 90° F. and gradually cooling it without employing friction, had proved very unsuccessful, but I was soon converted by its advantages, and in the autumn of 1892 I had a personal experience with cold bathing which proved so valuable to me that I may be allowed to refer to it here. At that time I had a mild but unmistakable attack of enteric fever, and "tubbing" was commenced upon the fifth day. The baths were given for the most part at 75° F., but several were at 65° F. The former temperature I found very endurable, but the latter was uncomfortably cold. The baths had but little effect in reducing the body temperature but I always experienced immediate relief from the general aching and muscular pains which were particularly severe. It is not agreeable at any time to be taken out of a warm bed and suddenly immersed in cold water, but the after effect was so soothing and the favorable influence upon all the symptoms was so pronounced that the temporary discomfort was easily endured.

Delirium did not occur, and the digestion was excellent. I found that close attention to minute details added greatly to comfort. There was less shivering when the *back* was vigorously rubbed as soon as the water was entered, and the friction should be constantly and vigorously maintained over the entire body which is easily turned if completely immersed in the water. The alcoholic stimulation should be given at least fifteen or twenty minutes before the bath instead of immediately before, in order to secure its absorption in time to meet the shock of cold. On being lifted into bed again the body should be rubbed thoroughly dry and a refresh-

ing sleep almost invariably follows. My experience also demonstrates the ease with which this treatment can be conducted in private practice. A large ready-made tin bath tub can be bought for a few dollars, and placed by the bedside, raised on two blocks of wood to a height convenient for the rubbers. It is filled by a hose from any neighboring faucet, and the same hose will siphon the water out again when desired.

In conclusion, I may say emphatically that under the Brand system in nearly all cases the patients are both subjectively more comfortable and objectively much stronger and better nourished than under any other treatment which I have followed. We should bear in mind that the object of the bathing is not alone the reduction of temperature, but is in great part directed to stimulation of the central nervous system through the agency of the cutaneous nerves, both by the sudden shock of cold and by the mechanical stimulus of friction applied over a very large surface. The method thus becomes a definite systematic treatment which has yielded far better results than any symptomatic or merely "expectant" plan.